

Not what the doctor ordered?

Trends in prescription drugs and OTC med abuse

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Why this is a bit different....

- -Prescribed by a “Professional”
- -Insurance does not pay drug dealers
- -Pharmaceuticals are “safer” than street drugs

What to do, what to do....



President Signs Secure and Responsible Drug Disposal Act

- On October 12, President Obama signed into law the Secure and Responsible Drug Disposal Act (S 3397). This law provides the authority for ultimate users who have lawfully obtained controlled substances to deliver them for disposal to entities authorized to engage in drug disposal in accordance with regulations issued by the Department of Justice. DEA Acting Administrator Michele M. Leonhart said, “This bill will help reduce the diversion of prescription drugs that often sit in our own medicine cabinets far too long...The DEA will now work diligently to develop regulations that will allow people to dispose of their prescription medications in a responsible and safe manner, not just on one day, but every day.”
- Source: DEA Dateline, 10/22/2010

Overwhelming Success: Drug Take-Back Day

- On October 5, DEA announced the results of the first-ever national prescription drug “Take-Back” campaign where the public turned in more than 242,000 lbs of prescription drugs for safe and proper disposal at more than 4,000 take back sites nationwide on September 25. In a related matter, Congress cleared legislation for the President to sign that will allow DEA to create a framework for a permanent solution for prescription drug disposal. Currently, there are no legal means to transfer possession of certain prescription drugs for disposal. DEA will continue to hold one-day take-back programs until permanent regulations are in place.

Second National Drug Takeback Day Collects 188 Tons of Expired Drugs

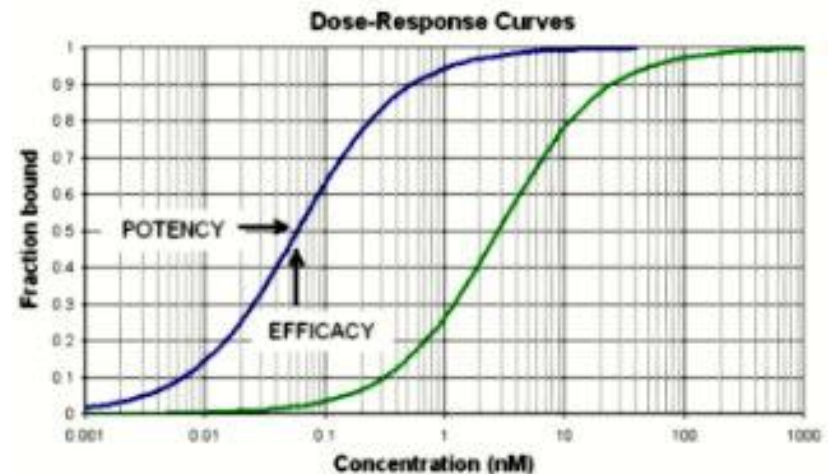
- MAY 06 – (WASHINGTON, D.C.) – Americans participating in the United States Drug Enforcement Administration's (DEA's) second National Prescription Drug Take-Back event on April 30th turned in more than 376,593 pounds (188 tons) of unwanted or expired medications for safe and proper disposal at the 5,361 take-back sites that were available in all 50 states. This is 55 percent more than the 242,000 pounds (121 tons) the public brought in during last September's event

Half Life

- Abbreviated as: $t_{1/2}$
 - The time it takes for a substance to lose half of its pharmacologic activity
 - Generally, 9 x $t_{1/2}$ it's gone
 - Does NOT equal elimination half-life
- | | | |
|-----|-----------------|--------------|
| • 0 | 1/1 | 100% |
| • 1 | $\frac{1}{2}$ | 50% |
| • 2 | $\frac{1}{4}$ | 25% |
| • 3 | $\frac{1}{8}$ | 12.5% |
| • 4 | $\frac{1}{16}$ | 6.25% |
| • 5 | $\frac{1}{32}$ | 3.125% |
| • 6 | $\frac{1}{64}$ | 1.563 |
| • 7 | $\frac{1}{128}$ | 0.781 |
| • n | $\frac{1}{2^n}$ | $100(1/2^n)$ |

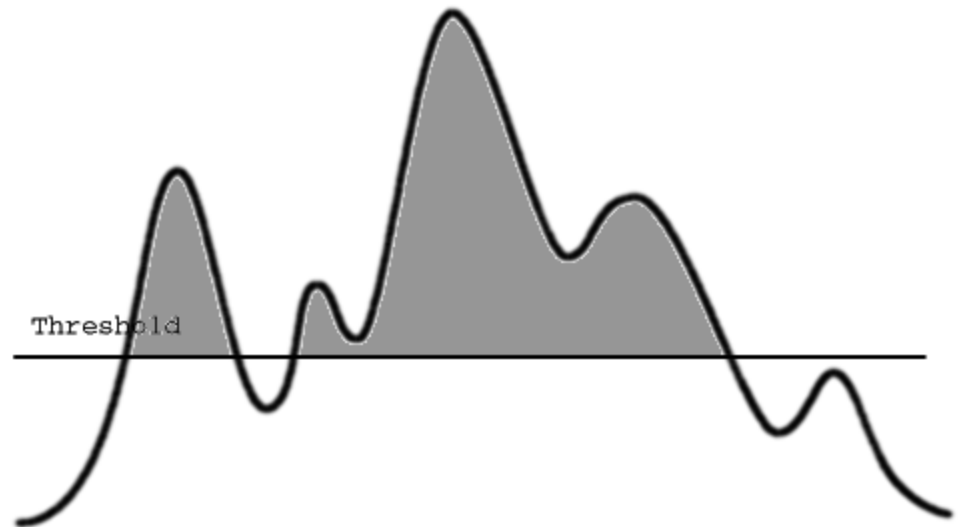
Potency

- A measure of drug activity expressed in terms of the amount required to produce an effect of given intensity. A highly potent drug evokes a larger response at low concentrations. It is proportional to Affinity and Efficacy
- For our purposes, how strong the stuff is.....don't forget synergistic effect and contaminants



Effective Dose

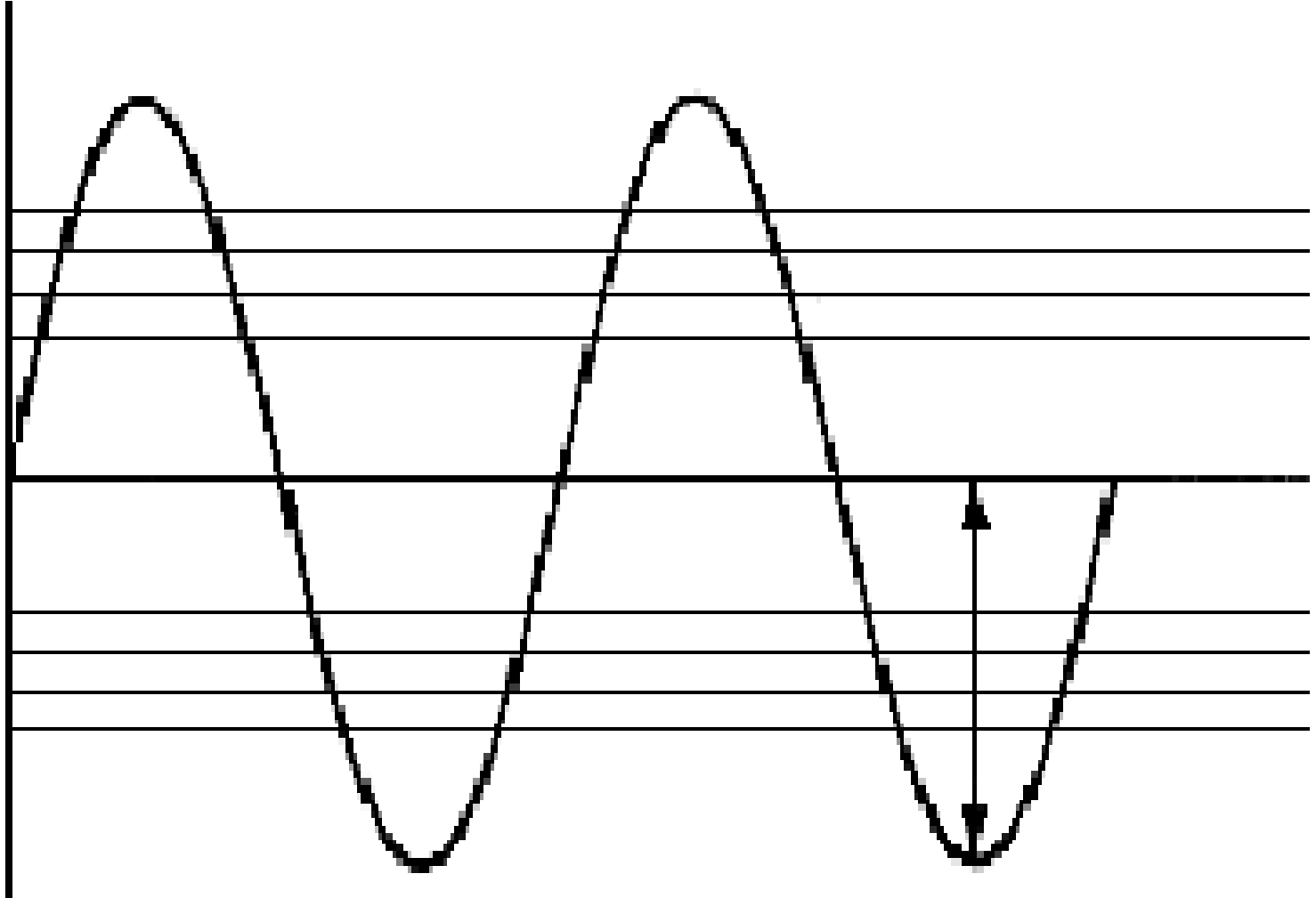
- Abbreviated as: ED-50
- An **effective dose** in pharmacology is the amount of drug that produces a therapeutic response in 50% of the people taking it, sometimes also called **ED-50**.



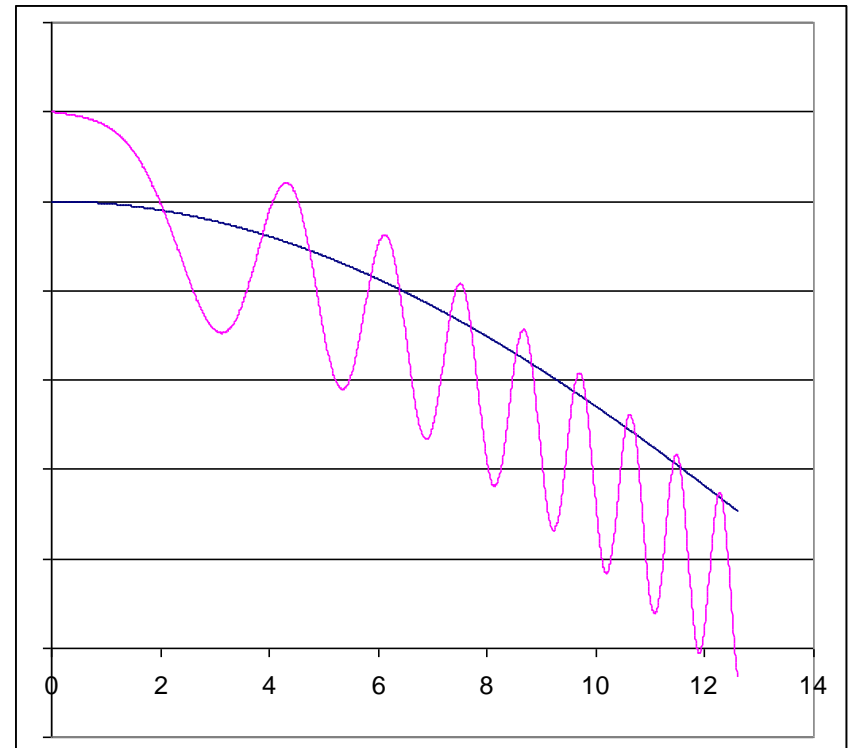
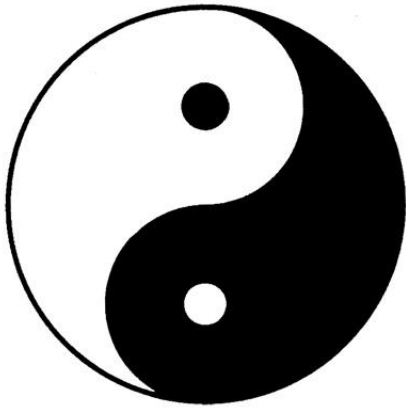
Intoxication/Withdrawal

- Intoxication:
- Development of a reversible substance specific syndrome due to the recent ingestion of (or exposure to) a substance
- Withdrawal:
- Development of a substance specific maladaptive behavioral change, with physiological and cognitive concomitants, that is due to the cessation of, or reduction in, heavy and prolonged substance use.

Intoxication & withdrawal

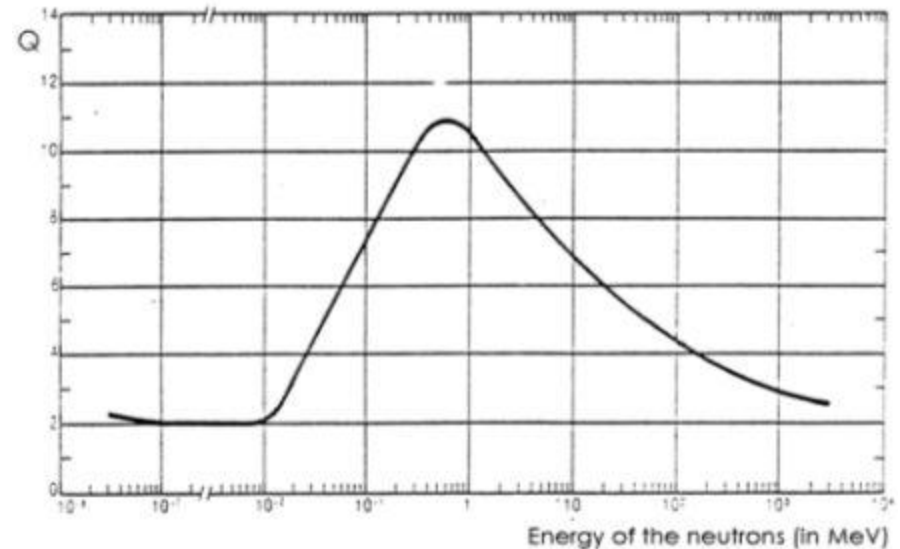


Intoxication/Withdrawal



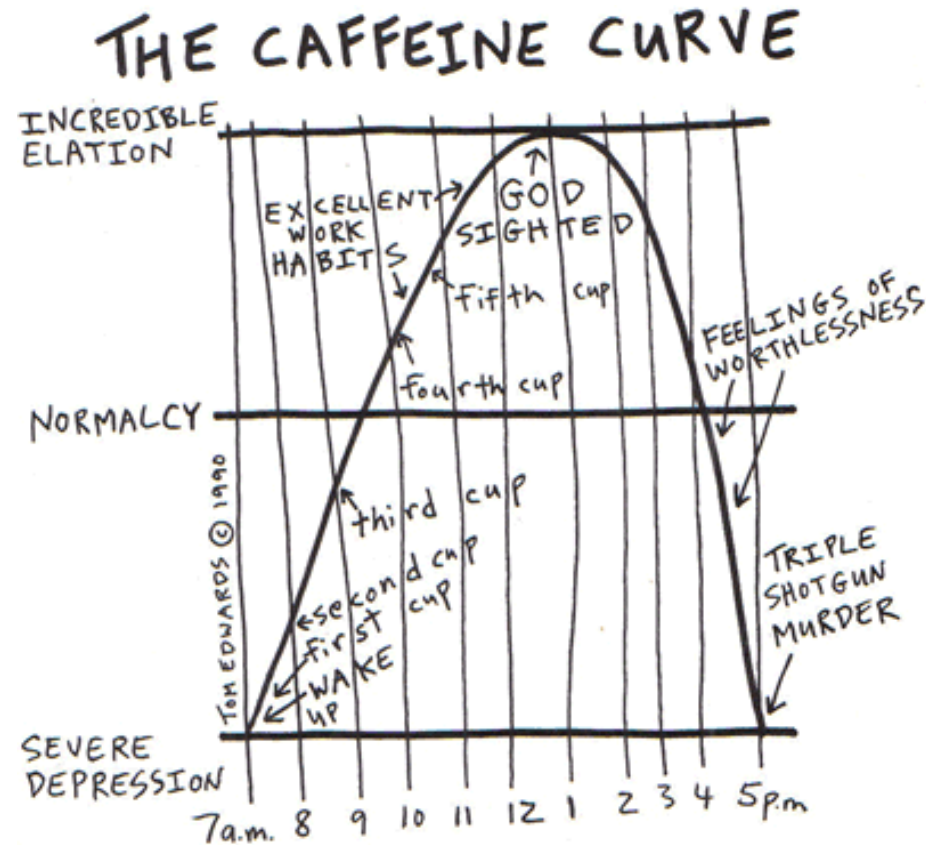
Tolerance=Adaptation

- Person's response is decreased to same dose, requiring greater volume or frequency of application (tachyphylaxis end result, as with amphetamines “amped out”)



Drugs make you feel something you normally don't

- $T_{1/2}$
- Effective Dose: ED_{50}
- Lethal Dose: LD_{50}

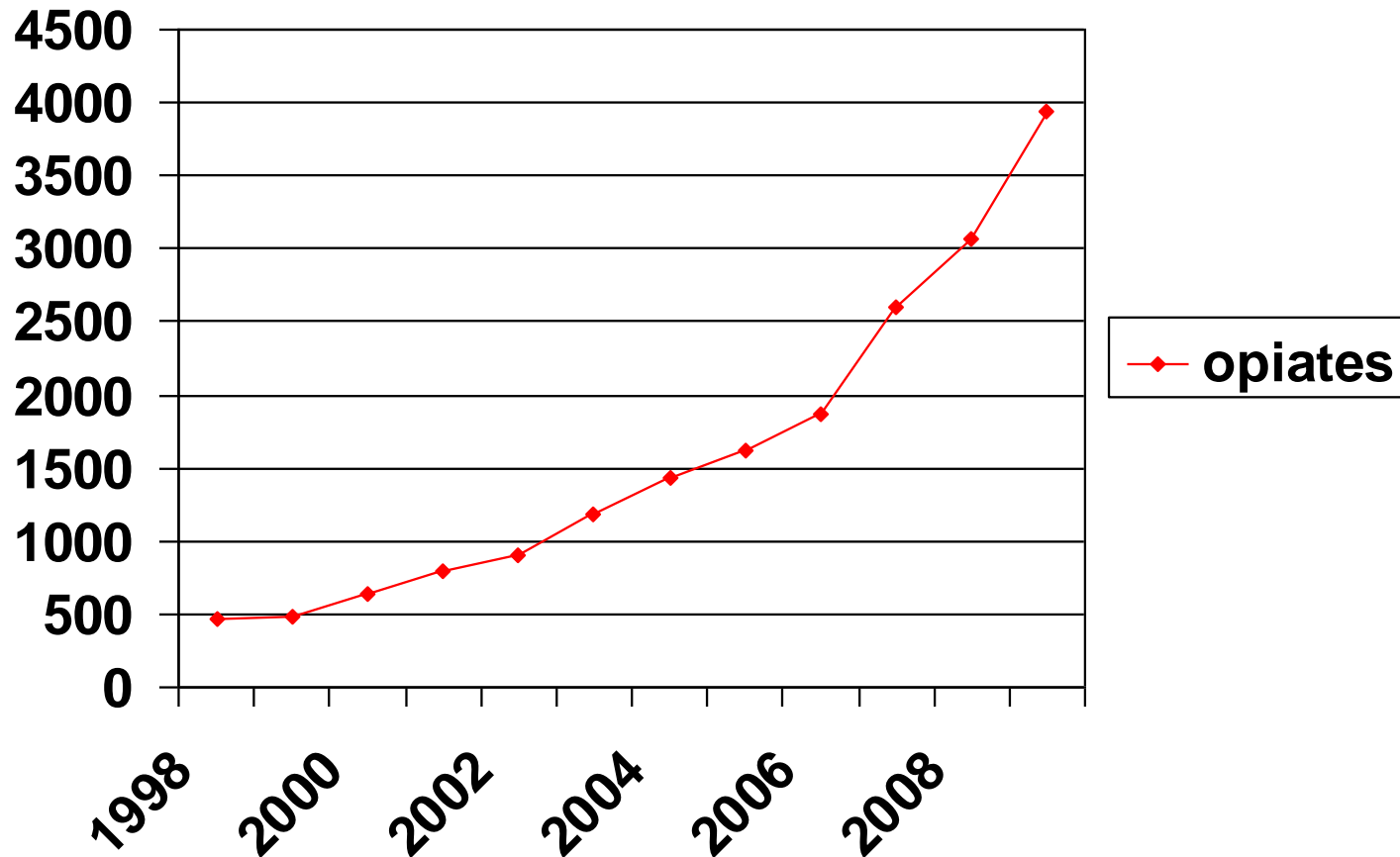


Opioids

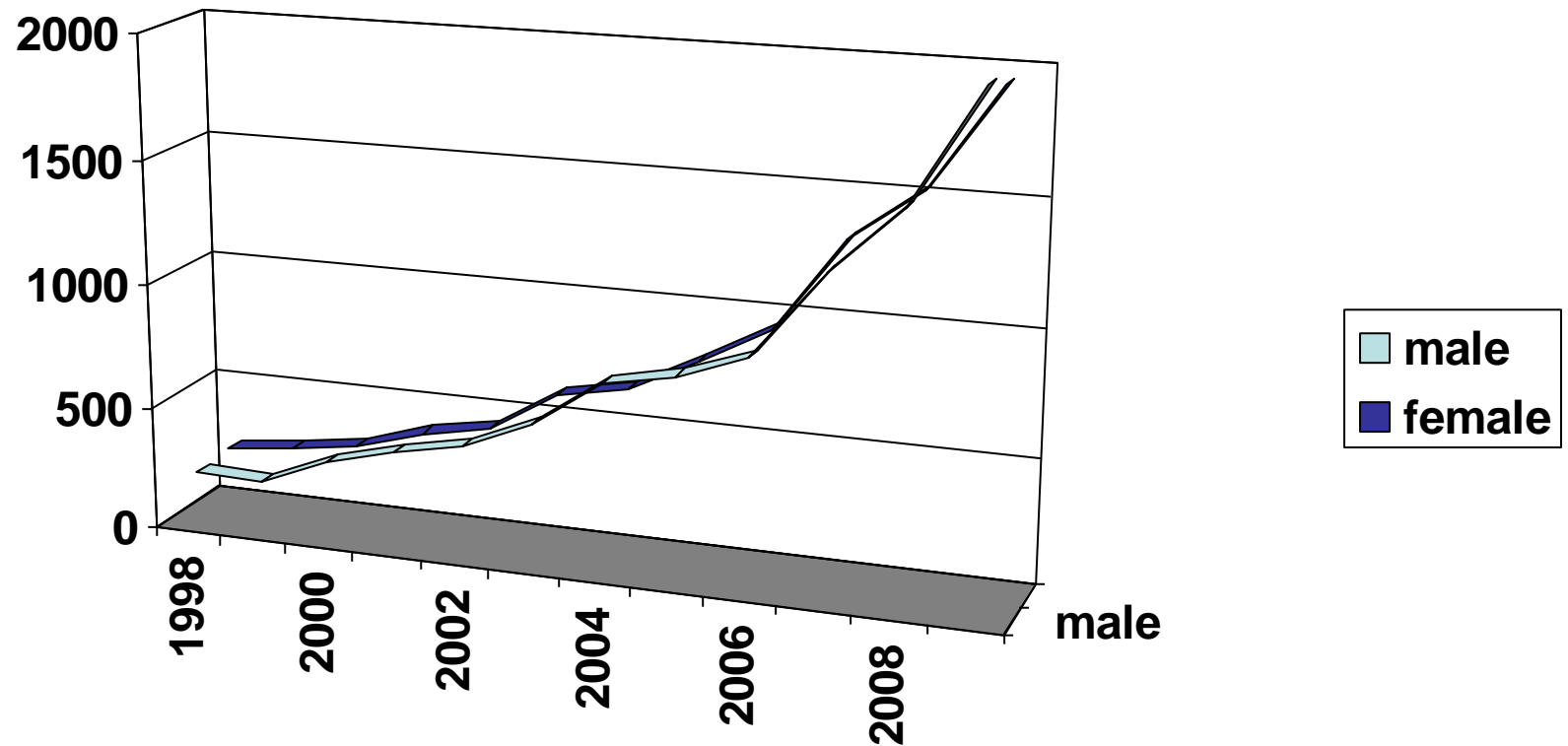
- Contains morphine (natural) heroin (semi-synthetic), diverted methadone (synthetic), other prescription opioid drugs
- Water soluble, detectible by UDS
- Agonist and antagonist properties at mu and kappa-opioid receptor sites
- Used as analgesics, anesthetics, anti-diarrheal, cough suppressants



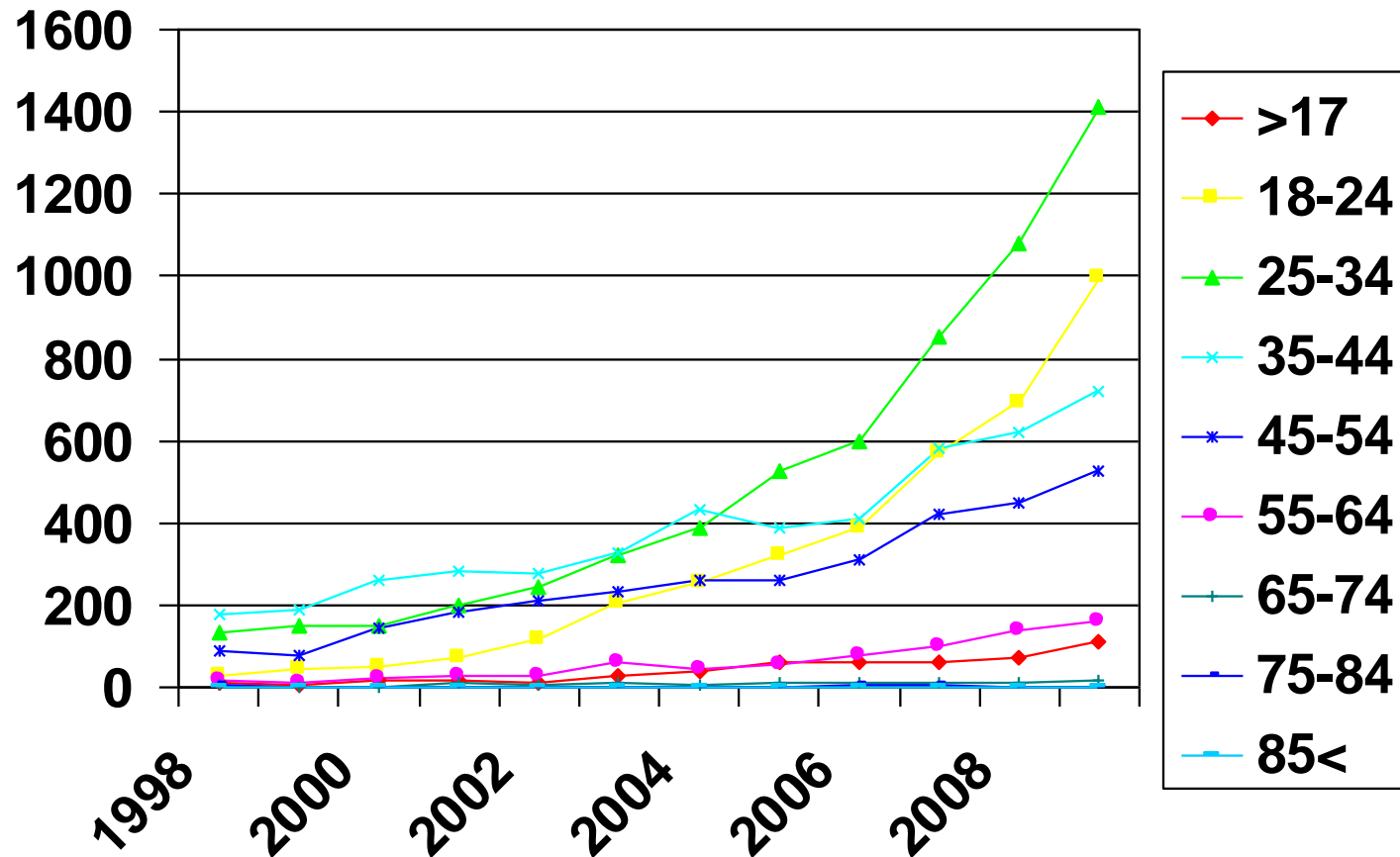
All Tx Admission for Opiates, 1998-2009



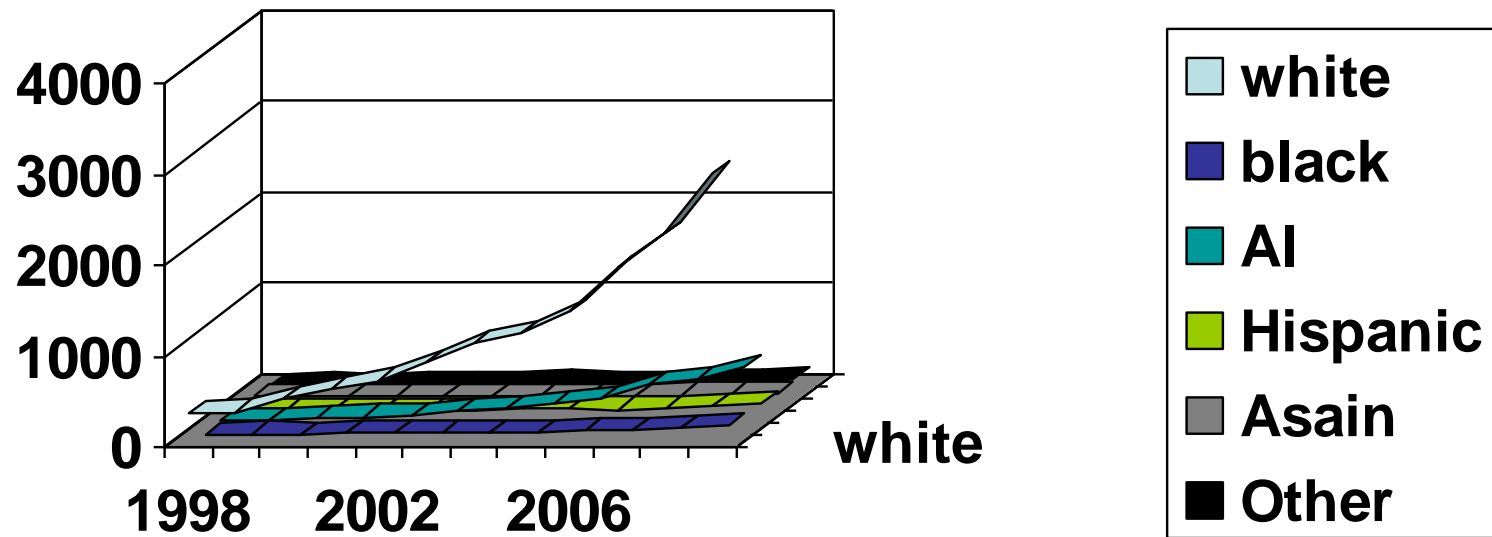
All Tx Admission for Opiates, by gender, 1998-2009



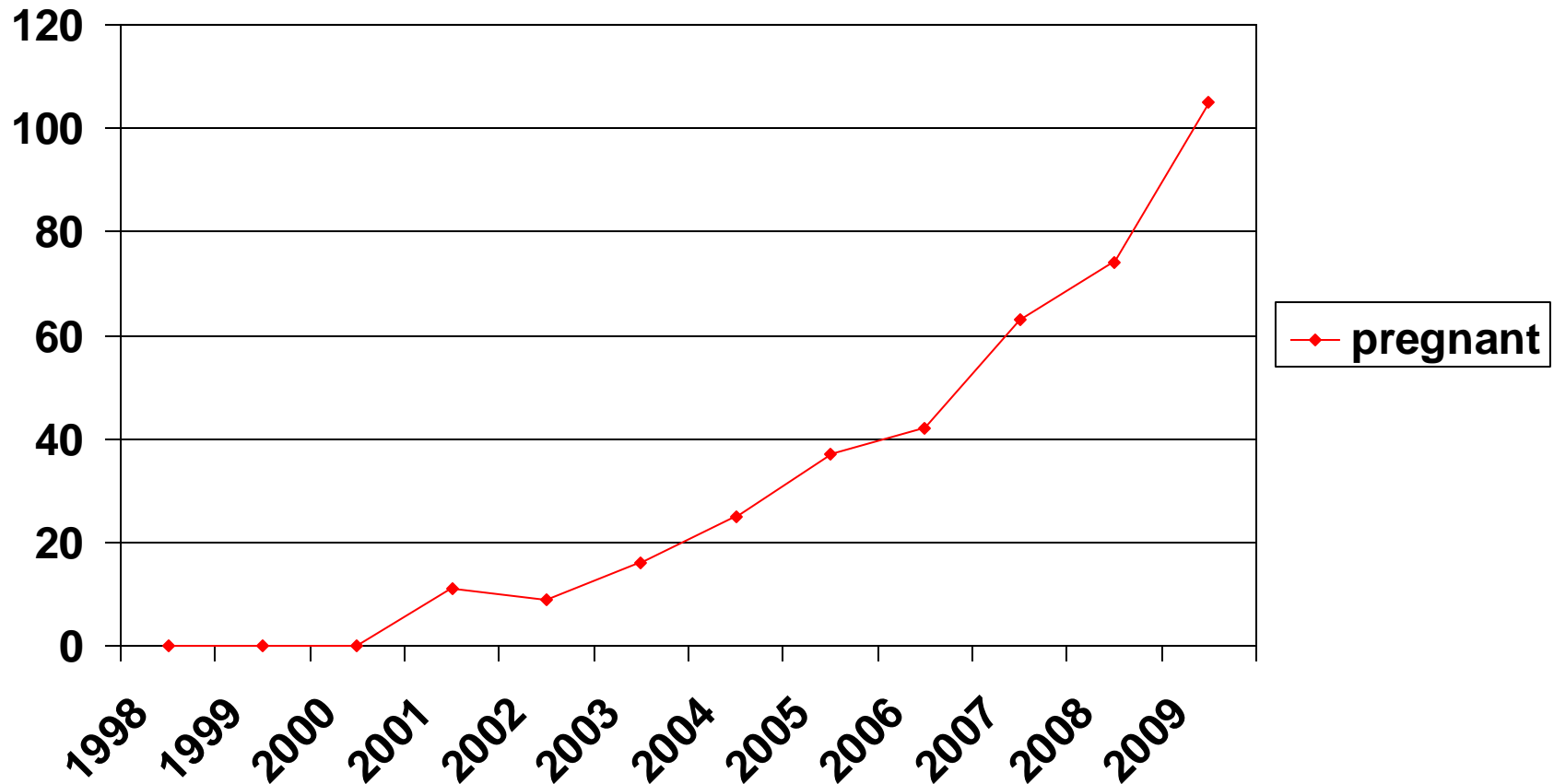
Opiates by age group, 2000-2009



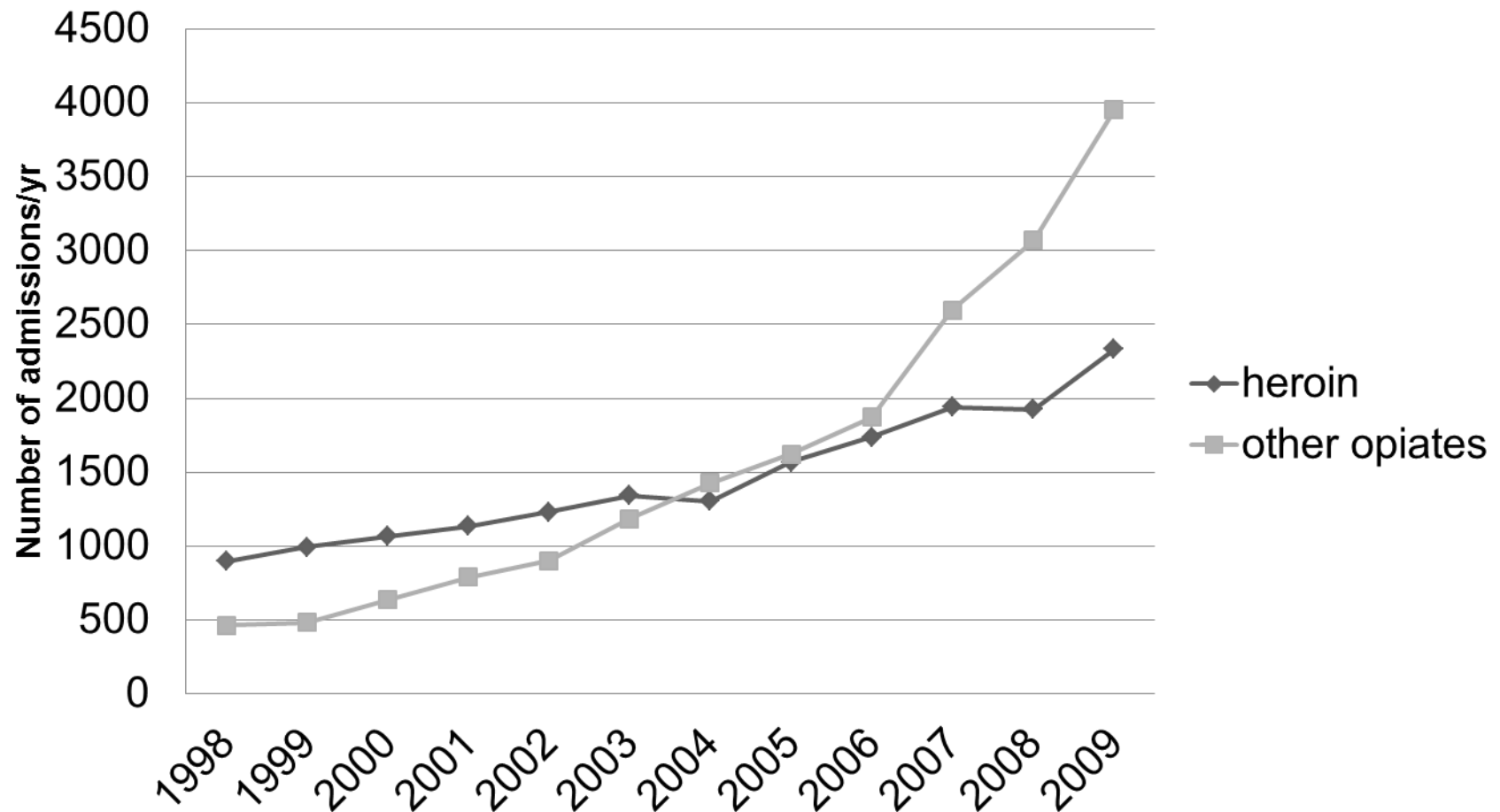
Opiates by race, 2000-2009



Pregnancy status at admission 2000-2009, opiates

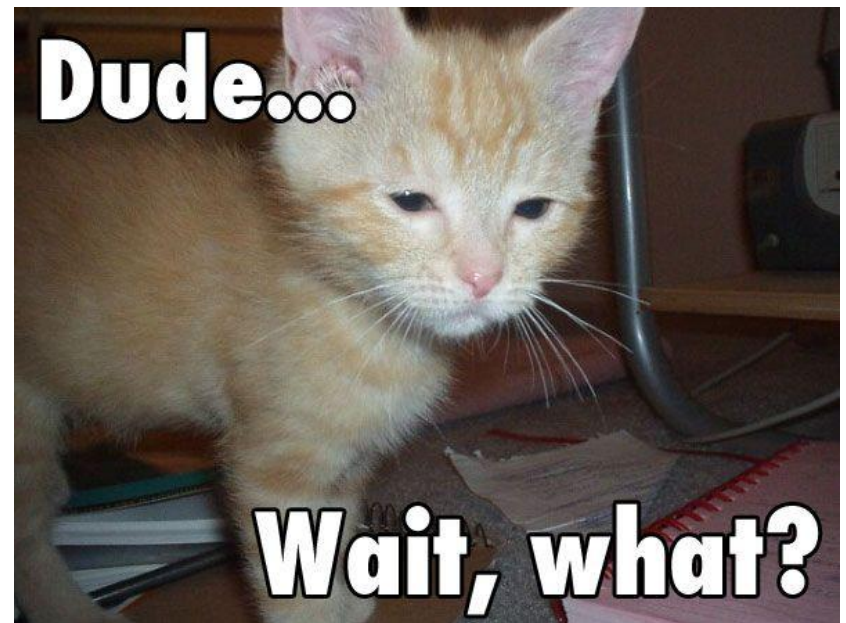


Heroin vs. other opiate admission 1998-2009



Opiate intoxication

- Directly related to volume and strength consumed



miosis

- Constricting of the pupil, 2-3mm



Slurred speech

- Inability to enunciate words, broken sentence structure and vocabulary choice



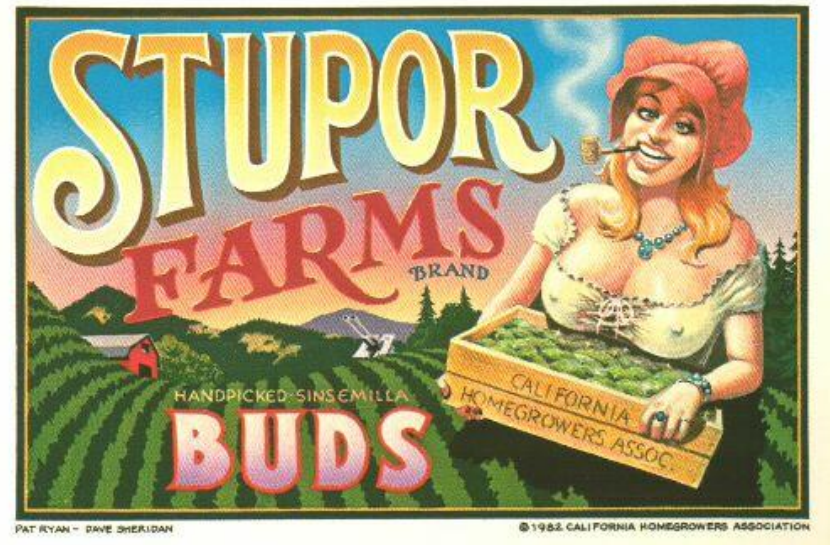
fatigue

- That state, following a period of mental or bodily activity, characterized by a lessened capacity for work and reduced efficiency of accomplishment, usually accompanied by a feeling of weariness, sleepiness, or irritability.



Stupor or coma

- The partial or nearly complete unconsciousness, manifested by the subject's responding only to vigorous stimulation



Psychomotor retardation

- General slowing of reflexes



Impairment in attention

- Inability to focus on objections or discussions, e.g. can't "track"



Impairment in memory

- Inability to recall short or long term memory, may also have difficulty with recognition



Opioid withdrawal

Rarely life threatening

- Looks like bad case of the flu



mydriasis

- Widening of the pupil, 7-8mm, slow and sluggish to respond



lacrimation

- Watering of the eyes, shedding tears



rhinorrhea

- Flowing, nasal discharge



diaphoresis

- Perspiration, especially profuse perspiration, e.g. “sweating”



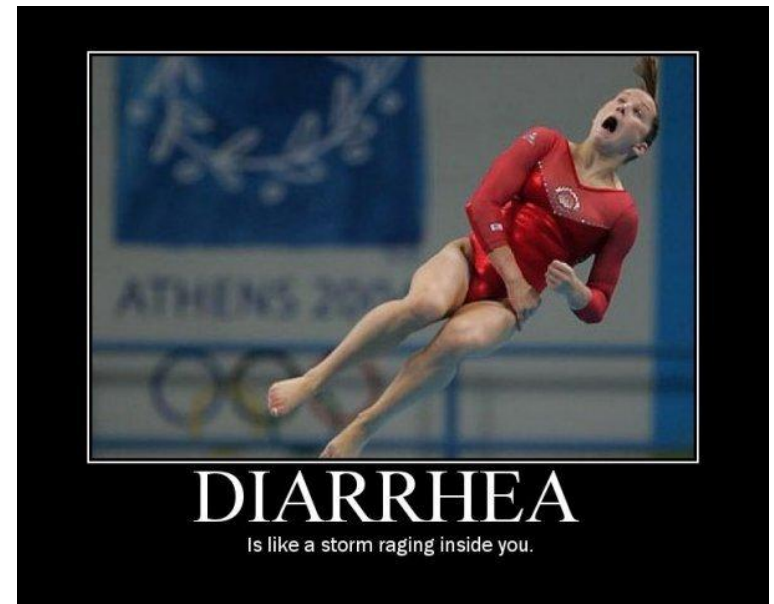
Nausea/emesis

- Upset stomach and vomiting



diarrhea

- A morbidly frequent and profuse discharge of loose or fluid evacuations from the intestines e.g. “the shits, the hershey squirts, the green apple two-step”



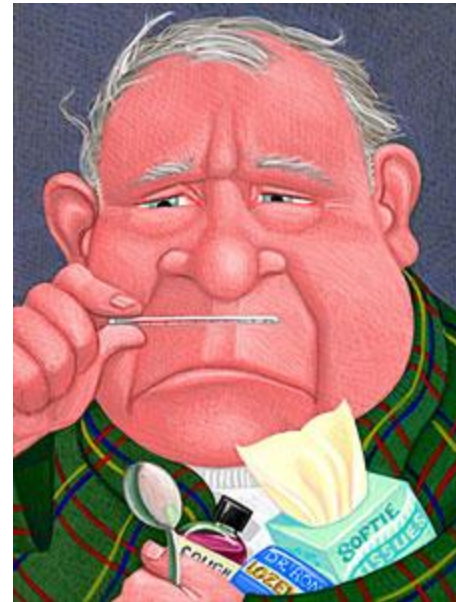
Muscle aches

- Burning pain in the muscle body



fever

- A rise in body temperature above normal usually as a natural response to infection. Typically an oral temperature greater than 100.4 degrees Fahrenheit constitutes a fever.



insomnia

- Inability to sleep, abnormal wakefulness



piloerection

- Erection of the hair, e.g. “hair standing on end”



dysphoria

- Excessive pain, anguish, agitation, disquiet, restlessness, malaise.



